

# Betti numbers of real toric manifolds arising from a graph

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For a graph  $G$ , a graph cubeahedron  $\square_G$  and a graph associahedron  $\triangle_G$  are simple convex polytopes which admit projective smooth toric varieties. In this talk, we introduce a graph invariant, called the  $b$ -number, which computes the Betti numbers of the real toric manifold corresponding to a graph cubeahedron. The  $b$ -number is a counterpart of the notion of  $a$ -number, introduced by S. Choi and H. Park, which computes the Betti numbers of the real toric manifold corresponding to a graph associahedron, see [1]. We also show that for a forest  $G$  and its line graph  $L(G)$ , the real toric manifold  $X^{\mathbb{R}}(\triangle_G)$  over  $\triangle_G$  and the real toric manifold  $X^{\mathbb{R}}(\square_{L(G)})$  over  $\square_{L(G)}$  have the same Betti numbers. This talk is based on a joint work with B. Park and H. Park.

## References

- [1] S. Choi and H. Park, A new graph invariant arises in toric topology, *J. Math. Soc. Japan* **67**:2 (2015), 699–720.